Supporting information

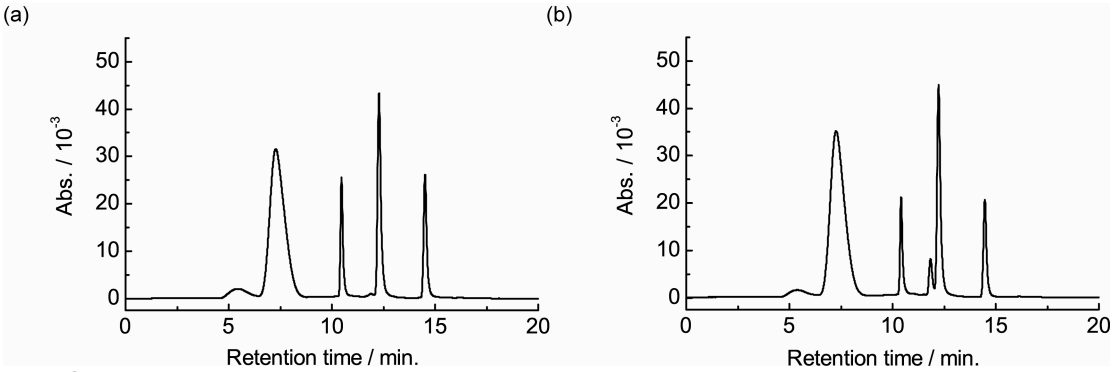

Figure S1. Reverse phase HPLC profiles for DNA1 (a) before and (b) after 1 min irradiation with a linear gradient of 5%–20% acetonitrile in 50mM ammonium acetate for 20 min at a flow rate of 1.0 ml/min. Broad two peaks around 5.5 and 7.2 min come from thiol-capping reagents (methylmethanethiosulfonate).

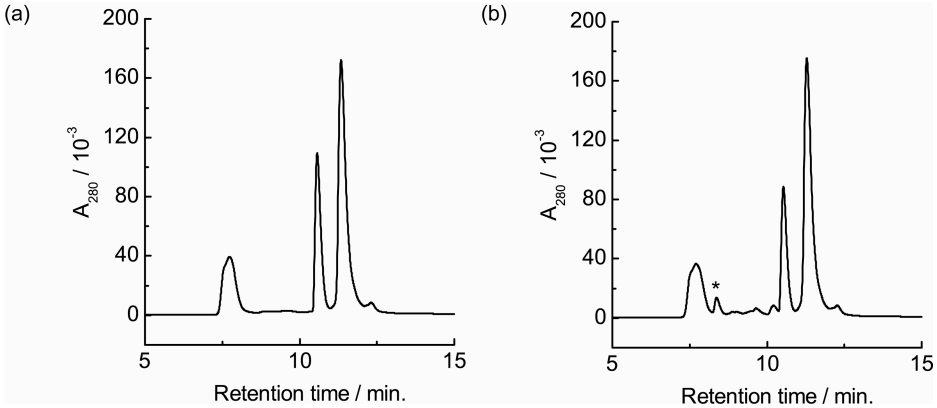

Figure S2. Reverse phase HPLC profiles for DNA1 possessing one SH group (a) before and (b) after 10 s irradiation in the presence of oxygen. Unmodified DNA was used instead of 3'-SH-DNA. Irradiated sample contains 10 μM DNA, 100 mM NaCl, 20 mM Na phosphate, pH 7.0. (a) Three peaks in HPLC profiles (retention time: 7.7, 10.6, and 11.3 min) are assigned to unmodified DNA, 5'-SH-DNA, AQ-DNA, respectively. (b) After 10 s irradiation, new peaks appeared concomitant with the decrease of 5'-SH-DNA. Major product of SH oxidation at 8.7 min represented by asterisk was characterized by MALDI-TOF MS ([M-H]$^-$: calcd for 5'-SO_3H-DNA 4496.8: found 4497, see Figure S3d), and assigned to SO_3H-DNA.

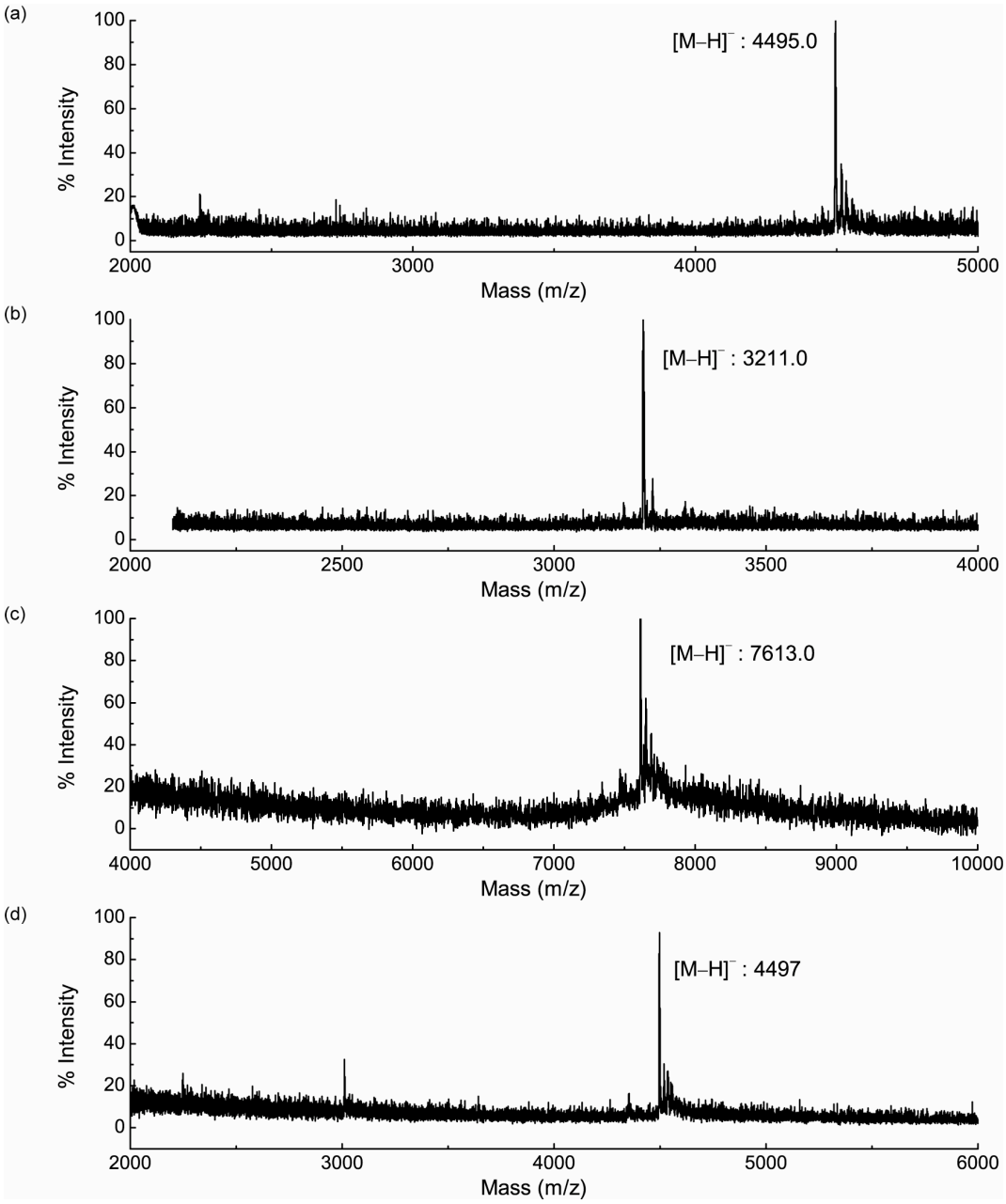

Figure S3. MALDI-TOF spectra for (a) SMe-capped 5'-SH-DNA and (b) SMe-capped 3'-SH-DNA of DNA1, (c) disulfide DNA (SS-DNA), and (d) major oxidation product (5'-SO_3H-DNA) separated by HPLC after irradiation. $[M-H]^-$: calcd for SMe-capped 5'-SH-DNA, SMe-capped 3'-SH-DNA, SS-DNA, and SO_3H-DNA, 4494.8, 3211.0, 7612.8, and 4496.8, respectively.